CLAIMS

1. Method for monitoring the access to the cardiovascular system of a patient undergoing an extracorporeal treatment of blood in a machine (1) comprising a treatment device (4) and an extracorporeal circuit (2) having an arterial branch (8) and a venous branch (10), the arterial branch (8) having a first end fitted with an arterial needle (12) to be inserted in the vascular system of the patient and a second end connected to an inlet of the treatment device (4), and the venous branch (10) having a first end connected to an outlet of the treatment device (4) and a second end fitted with an venous needle (13) to be inserted in the vascular system of the patient,
the method being characterized in that it comprises the steps of:

- generating a potential difference between a first point (B) of the venous branch (10) and a part of the machine (1);
- detecting the value (dV) of a quantity that correlates with the electric current along at least one section (10a; 10b; 10c) of the venous branch (10) between the first point (B) and the venous needle (13); and
- comparing the detected value (dV) with a reference range (I).

2. Method according to claim 1, characterized in that the first point (B) is located between the venous needle (13) and a bubble trap (11) connected to the venous branch (10).

3. Method according to claim 1, characterized in that the quantity that correlates with the current is a voltage drop.

4. Method according to claim 1, characterized in that it comprises the step of emitting at least one control signal (S, T, G) when the detected value (dV) is outside the reference range (I).

5. Method according to claims 2 and 3, characterized in that the voltage is generated by means of a generator (16) and detection is by means of a voltage drop detector (17), the generator (16) and the detector (17) being connected to the extracorporeal circuit (2) by means of capacitive couplers (21, 22, 25, 26).

6. Method according to claim 5, characterized in that a potential difference is generated between the first point (B) and the arterial branch (8) at a second point (A) located between the arterial needle (12) and a peristaltic pump (9) arranged on the arterial branch (8).

7. Method according to claim 6, characterized in that the voltage detector (17) is connected to the venous branch (10) at a third and fourth point (C, D) located between the first point (B) and the venous needle (13), the section (10a) of the venous branch (10) where the detection takes place being located between the third and fourth point (C, D).

8. Method according to claim 6, characterized in that the voltage detector (17) is connected to the venous branch (10) at a third point (C) coinciding with the first point (B) and at a fourth point (D) close to the venous needle (13), the section (10b) of the venous branch (10) where the detection takes place being located between the third point (C) and the venous needle (13).

9. Method according to claim 5, characterized in that a potential difference is generated between the first

point (B) and a part of the machine (1) connected to earth.

10. Method according to claim 9, characterized in that the voltage drop detector (17) is connected to the third point (C) and to the arterial branch (8) at a fifth point (F) located between the peristaltic pump (9) and the arterial needle (12), the section (10c) of the venous branch (10) where the detection takes place being located between the third point (C) and the venous needle (13).

11. Device for monitoring the access to the cardiovascular system of a patient undergoing an extracorporeal treatment of blood in a machine (1) comprising a treatment device (4) and an extracorporeal circuit (2) having an arterial branch (8) and a venous branch (10), the arterial branch (8) having a first end fitted with an arterial needle (12) to be inserted in the vascular system of the patient and a second end connected to an inlet of the treatment device (4), and the venous branch (10) having a first end connected to an outlet of the treatment device (4) and a second end fitted with an venous needle (13) to be inserted in the vascular system of the patient,
the device (14) being characterized in that it comprises:

- a voltage generator (16) for generating a potential difference between a first point (B) of the venous branch (8) and a part of the machine (1);
- a detector (17) for detecting the value (dV) of a quantity that correlates with the electric current along at least one section (10a; 10b; 10c) of the venous branch (10) between the first point (B) and the venous needle (13);
- calculating means (15) for comparing the detected value (dV) with a reference range (I).

12. Device according to claim 11, characterized in that the first point (B) is between the venous needle (13) and a bubble trap (11) arranged along the venous branch (10).

13. Device according to claim 11, characterized in that the detector (17) is a voltage drop detector (17).

14. Device according to one of the claims from 11 to 13, characterized in that the calculating means (14) is designed to emit at least one control signal (S, T, G) when the detected value (dV) is outside the reference range (I).

15. Device according to claims 12 and 13, characterized in that the generator (16) and the detector (17) are connected to the extracorporeal circuit (2) by means of capacitive couplers (21, 22, 25, 26).

16. Device according to claim 15, characterized in that each of the capacitive couplers (21, 22, 25, 26) comprises at least one metal tube (27) wound around a respective portion of the extracorporeal circuit (2).

17. Device according to claim 15, characterized in that the generator (16) is connected to the venous branch (10) at the first point (B) and to the arterial branch (8) at a second point (A) located between the arterial needle (12) and a peristaltic pump (9) arranged on the arterial branch (8).

18. Device according to claim 17, characterized in that the detector (17) is connected to the venous branch (10) at a third and fourth point (C, D) located between the first point (B) and the venous needle (13), the section (10a) of the venous branch (10) where the detection takes place being located between the third and fourth point (C, D).

19. Device according to claim 17, characterized in that the detector (17) is connected to the venous branch (10) at a third point (C) which coincides with the first point (B), and at a fourth point (D) which is located close to the venous needle (13), the section (10b) of the venous branch (10) where the detection takes place being located between the first point (B) and the venous needle (13).

20. Device according to claim 15, characterized in that the generator (16) is connected to the venous branch (10) at the first point (B) and to a part of the machine (1) connected to earth.

21. Device according to claim 20, characterized in that the detector (17) is connected to the venous branch (10) at a third point (C) and to the arterial branch (8) at a fourth point (F), the fourth point (F) being located between the peristaltic pump (9) and the arterial needle (12), the section (10c) of the venous branch (10) where the detection takes place being located between the third point (C) and the venous needle (13).